GENERAL INSTALLATION MANUAL

FOR EGING PV MODULES

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLING OR USING THE MODULES.
PLEASE PASS ALONG THE ATTACHED USER MANUAL TO YOUR CUSTOMER.

1. INTRODUCTION

☆ This Installation Manual contains essential information for the electrical and mechanical installation that you must know before installing EGING PV modules. This also contains safety information you need to be familiar with.

☆ All the information described in this manual are the intellectual property of EGING and based on the technologies and experiences that have been acquired and accumulated in the history of EGING.

☆ This document does not constitute a warranty, expressed or implied. EGING does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with installation, operation, use or maintenance of the PV modules. No responsibility is assumed by EGING for any infringement of patents or other rights of third parties that may result from use of PV module.

☆ EGING reserves the right to make changes to the product, specifications or installation manual without prior notice.

2. GENERAL INFORMATION (INCLUDING WARNING AND SAFETY)

☆ The installation of PV modules requires a great degree of skill and should only be performed by a qualified licensed professional, including licensed contractors and licensed electricians.

☆ Please read this manual carefully before installing or using the modules. Please be aware that there is a serious risk of various types of injury occurring during the installation including the risk of electric shock.

☆ All EGING PV modules are equipped with a permanently attached junction terminal box that will accept variety of wiring applications or with a special cable assembly for ease of installation, and they do not require special assembly.

☆ EGING PV modules are designed in accordance with the international standard IEC61215, IEC61730 and UL1703. .The solar modules have been qualified for application class A(equivalent to safety class Ⅱ requirements) .

3. RULES AND REGULATIONS

The mechanical and electrical installation of the module should obey local regulations, including electrical law, construction law and electricity connection requirements. These regulations are different in different installation site, such as the installation on the building roof, different installation environment of the power station. Requirements may also differ with the system voltage, the use of AC or DC. For the specific terms, please contact local authority.

Before installing the PV module, contact appropriate authorities to determine permit, installation and inspection requirements that should be followed.

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< GENERAL SAFETY >

1. Installing PV modules and ground frames should be in accordance with applicable rules and regulations.
2. Only installer/service personnel should have access to the PV module installation site. In order to avoid a risk of injury or electrical shock, do not allow anyone to approach the PV module if the person has little knowledge on PV module or on the measures that should be taken when PV modules are damaged.
3. No matter where the PV modules are installed, either roof mounted construction or any other type of structures above the ground, appropriate safety practices should be followed and required safety equipment should be used in order to avoid possible safety hazards. Note that the installation of some PV modules on roofs may require the addition of fireproofing, depending on local building/fire codes.
4. In the case that the PV modules are non-integral type, the module is to be mounted over a fire resistant roof.
5. Follow all safety precautions of other components used in the system.
6. Do not clean the glass surface with chemicals. Do not let water stay on the glass surface of PV modules for a long time. This creates a risk of white efflorescence (glass disease) which may result in the deterioration of energy generation.
7. Do not install the PV module horizontally. It may cause dirt or white efflorescence (glass disease) due to water.
8. Do not cover the water drain holes of the frame. There is a risk of frost damage when the frame is filled with water.
9. When sliding snow load has to be considered, an appropriate measure has to be taken so that PV module frames on lower edge of PV modules will not be damaged.
10. In case the glass surface of a PV module is broken, wear goggles and tape the glass to keep the broken pieces in place.

< ELECTRICAL SAFETY>

1. Contact with electrically active parts of a PV module such as terminals can result in burns, sparks and lethal shock whether the PV modules is connected or not.
2. PV modules produce electricity when the sunlight or other sources illuminate the module surface. When the modules are connected in series, voltage is cumulative. When the modules are connected in parallel, current is cumulative. As a result, a large-scale PV system can produce high voltage and current which could present an increased hazard and may cause serious injury or death.
3. Do not connect the PV modules directly to the loads since the variation of the output power depending on the solar irradiation causes damage for the connected load.
4. Turn off inverters and circuit breakers immediately, should a problem occur.
5. A defective PV module may generate power even if it is removed from the system. It may be dangerous to handle the PV module while exposed to sunlight. Place a defective PV module in a carton after PV cells are completely shaded.
6. Do not expose PV module to sunlight concentrated with mirrors, lenses or similar means.
7. Do not shade portions of the PV module surface from the sunlight for a long time. The shaded cell may become hot (hot spot phenomenon) which results in solder joints peeling off.
8. In case of series connection, the maximum open circuit voltage must not be greater than the

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specified maximum system voltage. The voltage is proportional to the number of series. In case of parallel connection, please be sure to take proper measure (e.g. fuse for protection of module and cable from over current, and/or blocking diode for prevention of unbalanced strings voltage) to block the reverse current flow. The current may easily flow in a reverse direction.

< INSTALLATION SAFETY>

1. During transportation or storage, unless you reach the installation site, otherwise, do not open the package of the modules.
2. Please protect the modules' package. When loading or unloading the modules, please handle with care. Do not drop the packed pallet of modules down directly.
3. Before open the modules' package, store the modules in ventilated and dry place.
4. When opening the modules' package with knife, be careful not scratching the module.
5. Do not lift the whole module by grabbing the terminal box or cable in any sense.
6. Modules are heavy. Handle with care. Do not drop PV modules far above ground. Do not drop one module down on another module.
7. Do not stand or step on the module. Do not pass by stepping on the module especially when installing, maintain and washing the modules.
8. Do not hit or put excessive load on the glass or back sheet. Do not allow objects fall down on the module.
9. Do not cause an excessive load on the surface of PV module or twist the frame.
10. Do not scratch or hit at the back sheet. Do not hit on the terminal box or do not pull the cables. Please notice the ground condition when the module is placed horizontally with back sheet faced down.
11. Do not try to unpick the module, remove any parts or the nameplate of the module.
12. Do not brush oil paint or any other adhesive on the surface of the module. Do not scratch the insulation coating of the frame (except for grounding connection). It may cause corrosion of the frame or compromise the framework strength.
13. Do not drill holes in the frame. It may compromise the frame strength and cause corrosion of the frame.
14. Do not repair glass, back sheet or other broken part of the module.
15. Please install with dry tools in dry condition. Do not operate when the module is wet, unless wear proper equipment against electrical shock.
16. Do not grab the PV module at only one side. The frame may bend. Grab the PV module at two sides facing each other.
17. Do not touch the PV module with bare hands. The frame of PV module has sharp edges and may cause injury.
18. Do not scratch the output cable or bend it with force. The insulation of output cable can break and may result in electricity leakage or shock.
19. Do not try artificially to concentrate sunlight on the PV module. Never touch terminal box or the end of output cables with bare hands when the PV module is irradiated. Cover the surface of PV module with cloth or other suitable sufficiently opaque material to isolate the PV module from incident light and handle the wires with rubber-gloved hands to avoid electric shock.
20. Always wear protective head gear, insulating gloves and safety shoes (with rubber soles).
21. Do not touch the PV module unnecessarily during installation. The glass surface and the frames get hot. There is a risk of burn, or you may collapse because of electric shock.
22. Do not work under rain, snow or windy conditions.

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23. Do not touch the terminal box and the end of output cables the cable ends (connectors) with bare hands during installation or under sunlight, regardless of whether the PV module is connected to or disconnected from the system.
24. Plug in the connector tight and ensure the wiring work. Do not unplug the connector if the system circuit is connected to a load.
25. Do not stomp on the glass at work. There is a risk of injury or electric shock if glass is broken.
26. Do not work alone (always work as a team of 2 or more people).
27. When installing PV modules far above ground, wear a safety belt, do not drop any object (e.g., PV module or tools).
28. Do not wear metallic jewelry which can cause electric shock during installation.
29. Do not damage the back sheet of PV modules when fastening the PV modules to a support by bolts.
30. Do not damage the surrounding PV modules or mounting structure when replacing a PV module.
31. Bind cables by the insulation locks. Drooping down of cables from the terminal box could possibly cause various problems such as animal biting, electricity leakage in puddle.
32. Take proper measures for preventing the laminate (consisted of resin, cells, glass, back sheet, etc.) from dropping out of the frame in case the glass is broken.
33. Cables shall be located so that they will not be exposed to direct sunlight after installation to prevent degradation of cables.
34. When installing the module, make sure that the terminal box is on the higher side of the module for better waterproof.

4. COMPONENTS

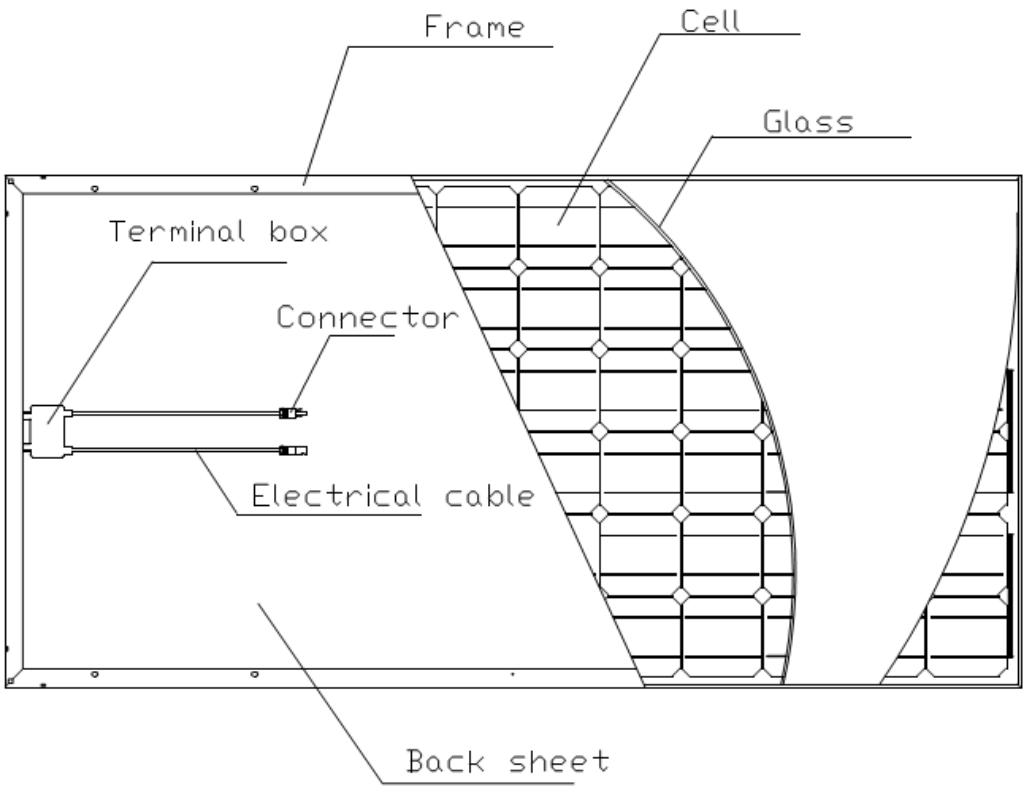

Figure 1 the components of a module

5. SITE SELECTION AND WORK ENVIRONMENT

☆ In most applications, the PV modules should be installed in a location where there is no shading throughout the year. Please make sure that there are no obstructions in the surroundings of the site of installation.

☆ Take proper steps in order to maintain reliability and safety, in case the PV modules are used in areas such as: Heavy snow areas / Extremely cold areas / Strong wind areas / Installations over, or near, water / Areas where installations are prone to salt water damage / Small islands or desert areas.

☆ If you are planning to use the PV modules where the salt water damage may be possible, please consult with EGING local agent first to determine an appropriate installation method, or to determine whether the installation is possible.

☆ EGING PV modules have also passed salt mist corrosion test according to IEC60701. But corrosion may occur in the module frame connecting to the bracket portion or the portion of ground connection. those parts shall be prepared with anti-corrosion treatment before usage.

☆ Make sure flammable gases are not generated near the installation site.

☆ EGING PV modules have passed the tests in IEC61215 and IEC61730, including damp heat test, wet leakage current test and so on. The protection level of EGING PV modules is IP65. The PV modules should not be installed in flooded areas. The junction box should be on the higher side of the module when it is mounted.

☆ EGING recommend that the PV modules should be installed in the place where the operating temperature is from -20℃ to 46℃. The operating temperature is the maximum and minimum monthly average temperature of the installation site. The limit of working temperature is from -40℃ to 85℃.

☆ EGING PV modules can be used on proper structure or any other place which is suitable for module installation(such as ground, roof and façade).

6. TILT ANGLE

☆ The tilt angle of the PV module is the angle between the PV module and a horizontal ground surface. The PV module generates the maximum output power when it faces the sun directly.

☆ In the Northern Hemisphere, the PV modules should typically face south, and in the Southern Hemisphere, the PV modules should typically face north.

☆ For the standalone systems with a battery where the PV modules are attached to a permanent structure, the tilt angle of the PV modules should be determined to optimize the performance when the sunlight is the scarcest. In general, if the electric power generation is adequate when the sunlight is the scarcest, then the angle chosen should be adequate during the rest of the year. For grid-connected installations where the PV modules are attached to a permanent structure, it is recommended to tilt the PV module at the angle equal to the latitude of the installation site so that the power generation from the PV module will be optimum throughout the year.

☆ For the detailed installation angle, which is different in different area, may refer to the recommendation of the experienced PV modules installation supplier.

7. WIRING

☆ To ensure proper system operation and to maintain your warranty, observe the correct cable connection polarity (Figures 2 & 3) when connecting the modules to a battery or to other modules.

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If not connected correctly, the bypass diode could be destroyed.

☆ PV modules can be wired in series to increase voltage. Connect wires from the positive terminal of one module to the negative terminal of the next module. Figure 2 shows modules connected in series.

☆ Connect PV modules in parallel to increase current. Connect wires from the positive terminal of one module to the positive terminal on the next module. Figure 3 shows modules connected.

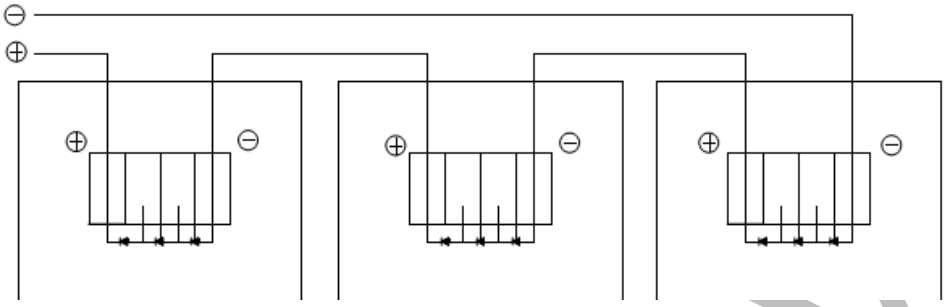


Figure 2.SERIES for more voltage

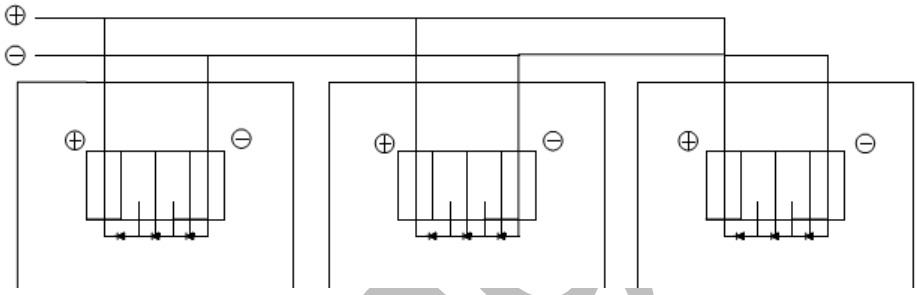


Figure 3.PARALLEL for more current

8. INSTALLATION

Refer to the installation of individual models of PV module in this manual.

9. ELECTRICAL RATINGS

Refer to the mechanical and electrical ratings of individual models of PV module in the annex of this manual.

10. GROUNDING

☆ The frame grounding is considered within the requirement of local regulation at the site of installation.

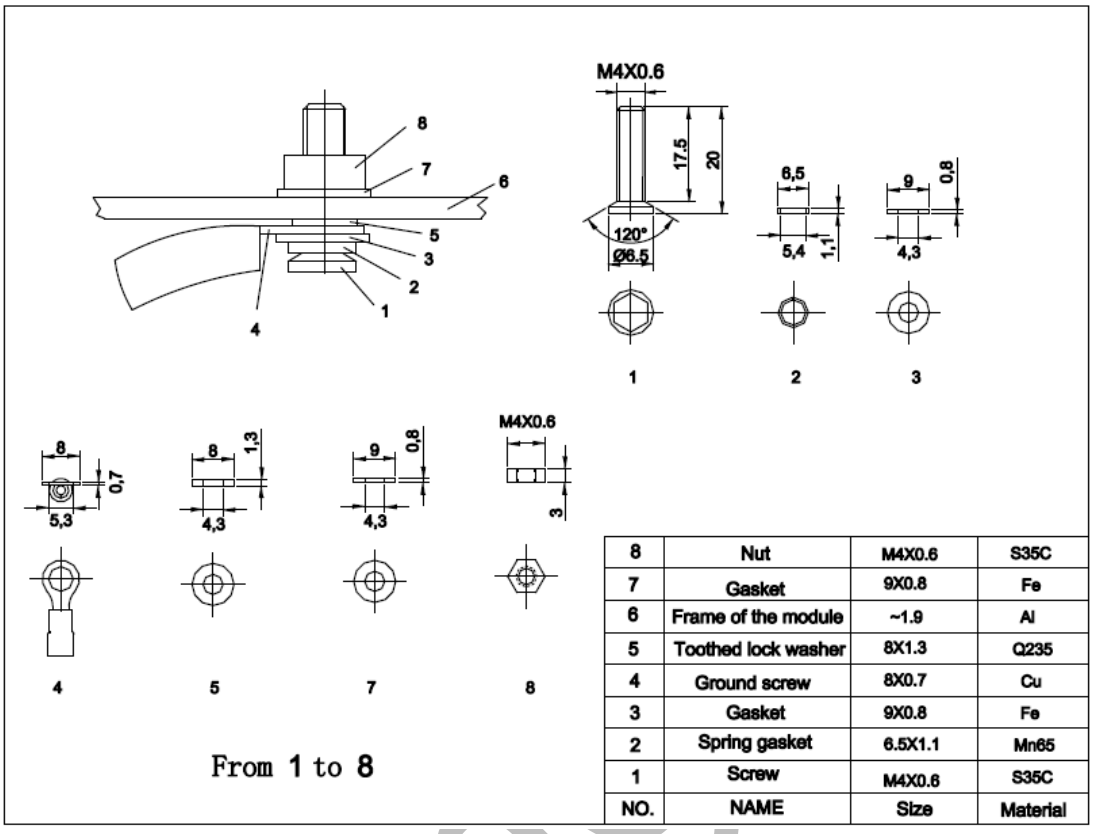
☆ When needed this grounding, please refer to below example of connection. Please be careful in arranging the system ground so that the removal of one module from the circuit will not interrupt the grounding of any other modules. The modules should be grounded to the same electrical point.

☆ Each PV module has a hole on each long side frame. Do not drill additional grounding holes on the frame. Otherwise, the module warranty may be void.

☆ An example of acceptable ground connection using a screw, nut（hardware not provided） and washer retaining a ground screw is shown in figure 4. The size of the grounding cable should be decided by the professional person who responsible for electrical installation. In a connection of this type, the hardware (such as a toothed locked washer / star washer) must score the frame surface to make positive electrical contact with the frame. The ground wire must be considered

within the requirement of local and regulation at the site of installation.

☆ If steel parts used for grounding purpose, steel parts must be plated, painted or enameled for protection against corrosion before usage.



NO.	NAME	Size	Material
8	Nut	M4X0.6	S35C
7	Gasket	9X0.8	Fe
6	Frame of the module	~1.9	Al
5	Toothed lock washer	8X1.3	Q235
4	Ground screw	8X0.7	Cu
3	Gasket	9X0.8	Fe
2	Spring gasket	6.5X1.1	Mn65
1	Screw	M4X0.6	S35C

Figure 4.Example of acceptable ground connection

11. MOUNTING

☆ Please make sure that all the information described in the installation manual is still valid and proper for your installation. The mounting method has been verified by EGING and NOT CERTIFIED by a third party organization. The approved way to mount EGING PV modules to a support structure is to use the bolt holes provided as described in the Specifications.

☆ Although EGING does not specify or warrant frame clips or clamps, using frame clips (not provided) or clamps (not provided) is also possible when they are designed for PV modules and with minimum dimensions on the sides of the module in accordance with the instructions and drawings provided. If using frame clips or clamps, the modules should be fixed rigidly and there shall be no damage to the modules by deforming mounting structure against design load. EGING does not specify or warrant frame clips.

☆ The EGING module warranty may be void if customer-selected frame clips which are improper or inadequate with respect to the module properties (including strength or material) or installation. Note that if metal clips are used, there must be a path to ground from the clips, (for instance, using star washers in the clip hardware set).Please review the descriptions and drawings carefully; not mounting the modules according to one of these methods may void your warranty.

☆ These mounting methods are designed to allow module loading of 5400Pa. Support structures that PV modules are mounted on should be rigid. EGING PV modules are designed to secure their electric performance under the condition that they are mounted on rigid support structures. Deformation of support structure may damage PV module with its electric performance. If the modules are to be installed on the roof or wall of a building, the standoff method or the rack method is recommended.

Clearance between the module frames and surface of the wall or roof is required to prevent the junction box from touching the mounting surface and to circulate cooling air around the back of the module. The exact space size may be decided by the installer or the system integrator based on the analysis of local weather and the specific roof structure involved.

☆ There are no limitations in the use of PV modules required to meet the building regulation requirements, in particular those relating to external fire spread. The PV modules can be used in concrete, slate or any other kinds of roofs which are strong enough and .the modules must be installed appropriately. Module installation will (must) ensure weatherproofing.

☆ Each module has 8 mounting holes on two long sides (Figure 5). Usually 4 mounting holes is enough, the installer can use either No. 1 or No. 2 group of holes as shown in Figure 5 according to the circumstances. If additional wind or snow loads are anticipated for this installation, please use 8 mounting holes. System designer and installer are responsible for load calculations and for proper design of support structure.

☆ For the mounting using clips on the long edge of module, 4 clips are usually adoptive. If additional wind or snow loads are anticipated for this installation, increase the number of clips to 6 or 8 as required. System designer and installer are responsible for load calculations and for proper design of support structure.

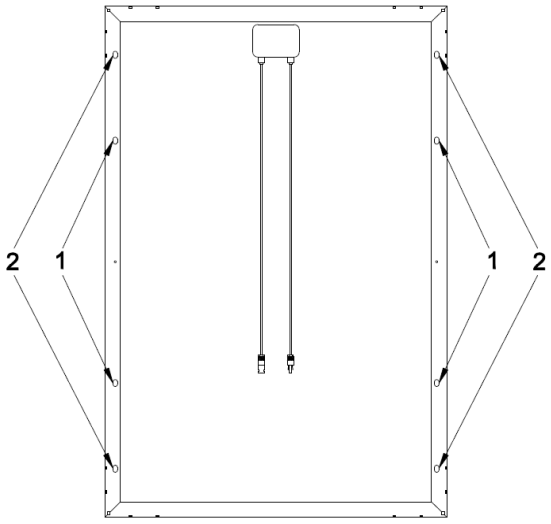


Figure 5.mounting holes

12. MAINTENANCE

☆ The modules are designed for long life. The regular inspection and maintenance of the module must be carried out especially during the warranty period. It is the responsibility user must bear. When the module gets damaged, inform the supplier in time (usually 2 weeks).

☆ If the angle of the PV module is 5 degrees or more, normal rainfall is sufficient to keep the module glass surface clean under most weather conditions. If dirt build-up becomes excessive, clean the glass surface only with a soft cloth using water. If cleaning the back of the module is required, take utmost care not to damage the back side materials. Do not use acidic or alkaline cleaning agent to wash the modules.

☆ Do not trample on the module when wash it. Do the security work.

☆ In order to ensure the operation of the system, please check the connection of wiring and the state of the jacket of wires every now and then.

INSTALLATION MANUAL - PHOTOVOLTAIC MODULES-

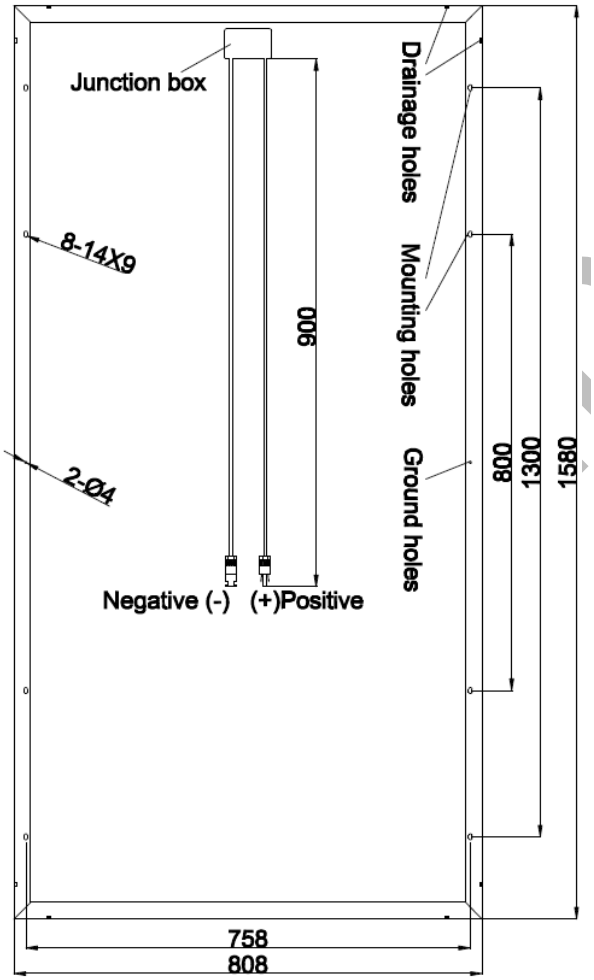
EGM-***

1. INSTALLATION

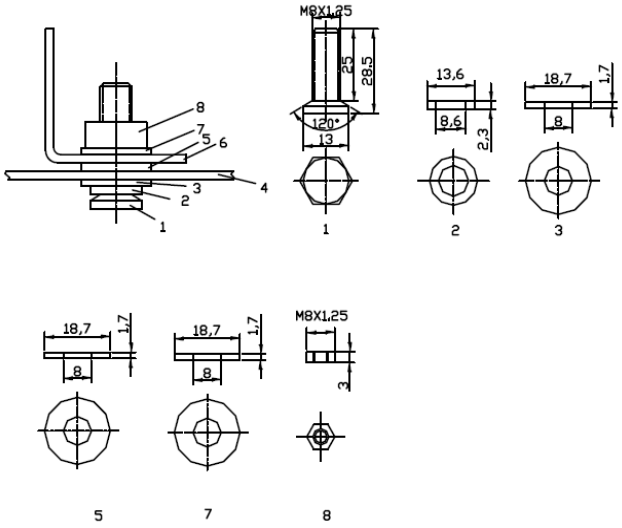
The mounting method has been verified by EGING and NOT CERTIFIED by a third party organization. Please review the descriptions and drawings carefully; not mounting the modules according to one of these methods may void your warranty. These mounting methods are designed to allow module loading of 5400Pa.

Mounting Using Frame Bolt Holes (Figures 1 、2 & 3)

The modules may be fastened to a support using the bolt holes in the bottom of the frame at location "C", as shown in Figure 1 (back view of the module) 、Figure 2 (mounting detail) and Figure 3 (parts detail). The modules are fastened with four (4) M8 bolts at least. Customers can choose external mounting holes or (and) internal mounting holes symmetrically according to their own needs.



Figures 1.



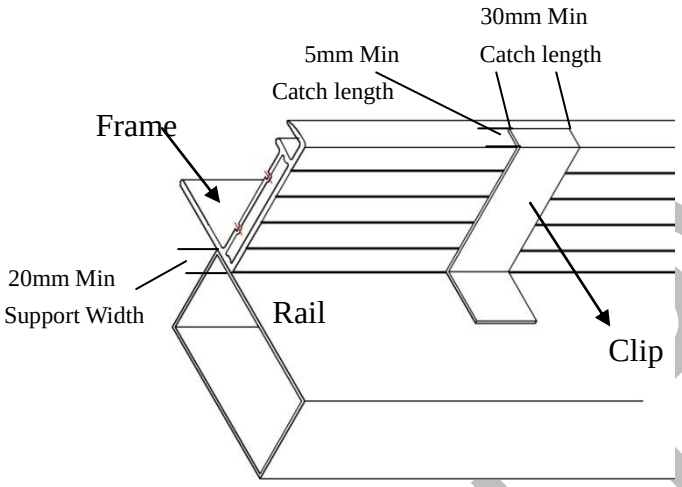
Figures 2

8	Nut	M8X1.25	S35C
7	Gasket	18.7X1.7	Fe
6	Mount	≈5	Q235
5	Gasket	18.7X1.7	Fe
4	Frame of the module	~1.9	Al
3	Gasket	18.7X1.7	Fe
2	Spring gasket	13.6X2.3	Mn65
1	Screw	M8X1.25	S35C
NO.	NAME	Size	Material

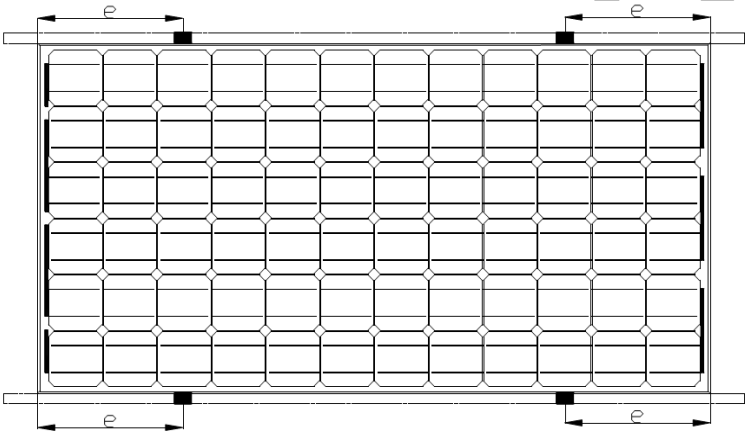
Figures 3

Mounting Using Clips on Long Edge of Module: Long Edge Parallel to Array Rails

1) The modules may be mounted using clips (clamps) designed for solar modules as shown in Figures 4 and 5. Note that the clip positions are important – the clip centerlines must be between 140mm and 390 mm from the end of the module. The module must be supported along the length of the long edge, and should overlap the array rail by at least 20 mm. Note that the mounting clips should meet the minimum dimensions (catch width of 5mm and length of 30 mm) as shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400 Pa.

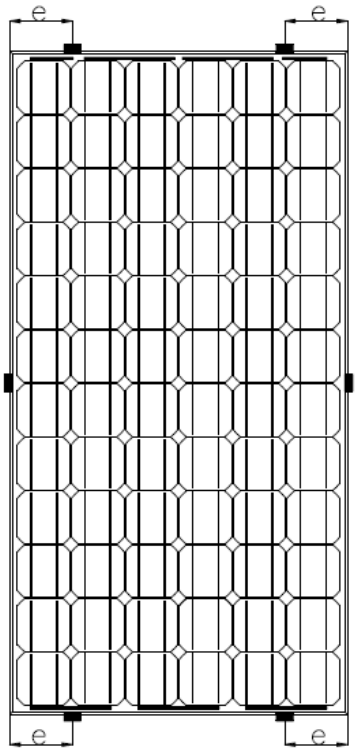


Figures 4



140 mm＜e＜390 mm

Figures 5



150 mm＜e＜250 mm

Figures 6

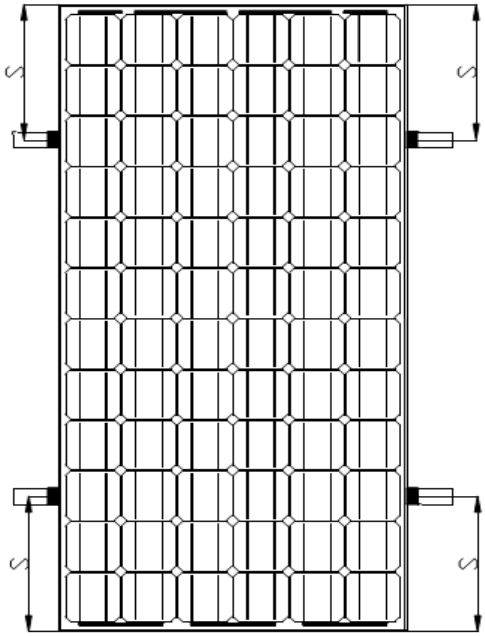
2) The modules may also be clamped at 4 corners on the short frame part as shown in Figure 6. The mounting clips should meet the minimum dimensions (catch width of 5 mm and length of 30 mm) as shown in Figure 4. Note that the clip positions are important – the clip centerlines must be between 150 mm and 250 mm from the end of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use four clamps on short frames and two clamps at the centre of each long frame, as shown in Figure 6.

Mounting Using Clips on Long Edge of Module: Long Edge Perpendicular to Array Rails

1) The modules may also be mounted using clips on the long sides of the module when the array rails are perpendicular to the long sides, as shown in Figure 7. The clip centerlines must be between 140mm and 390mm from the ends of the module. Note that the mounting clips should meet the minimum

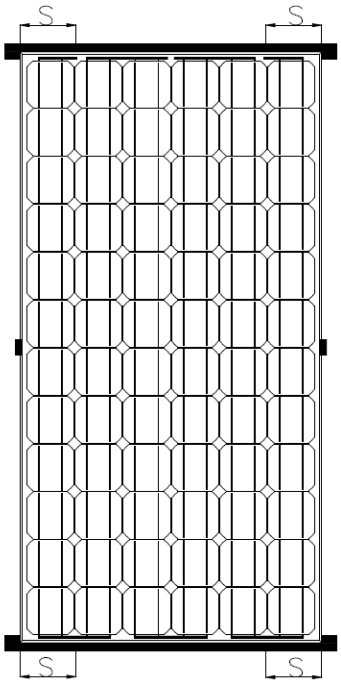
dimensions (catch width of 5mm and length of 30mm) shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400 Pa.

2) The modules may also be mounted on the short sides of the module with four clamps, as shown in Figure 8. The module must be supported along the length of the short edge, and should overlap the array rail by at least 20mm. The clip centerlines must be between 150 mm and 250 mm from the ends of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use two more clamps at the centre of each long frame, as shown in Figure 8.



140mm＜s＜390mm

Figures 7



150mm＜s＜250mm

Figures 8

2. ELECTRICAL INSTALLATION INSTRUCTION

Cable characteristics

Size: 4.0mm^2

Type: PV1-F

Temperature rating of conductor: -40~120 ℃

Module configuration (Recommend)

Maximum parallel strings without proper measures (e.g. fuse and/or blocking diode): 1 string.

Note: Parallel configuration is not limited in case of taking proper measure (e.g. fuse for protection of module and cable from over current, and/or blocking diode for prevention of unbalanced strings voltage) to block the reverse current flow.

3. WARNING

1）Do not stand or step on the PV module (Glass, Frame, Film and Terminal box).

2）Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of Isc and Voc marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor capacities, fuse sizes and size of controls connected to the module output.

INSTALLATION MANUAL - PHOTOVOLTAIC MODULES-

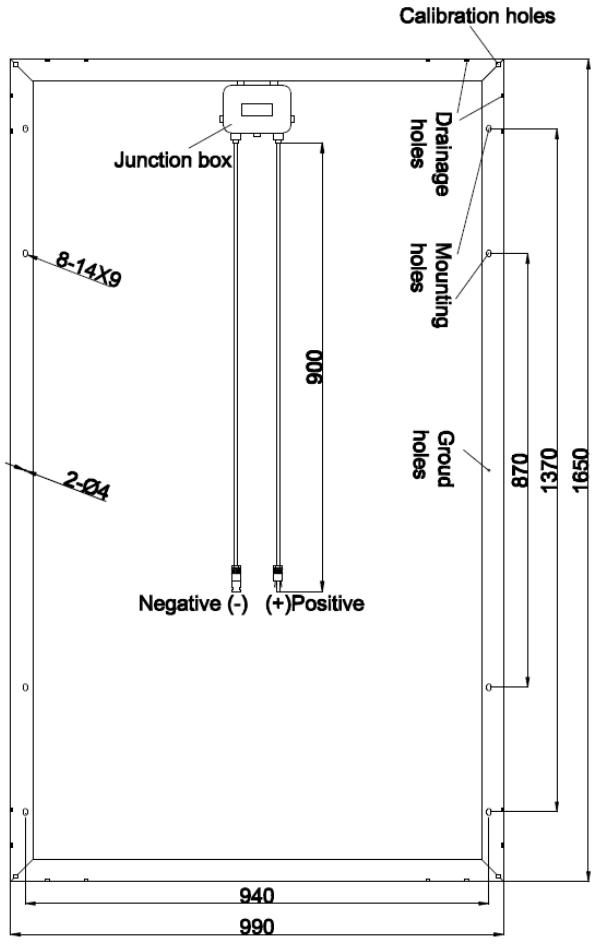
EG-***M60-C EG-***P60-C

1. INSTALLATION

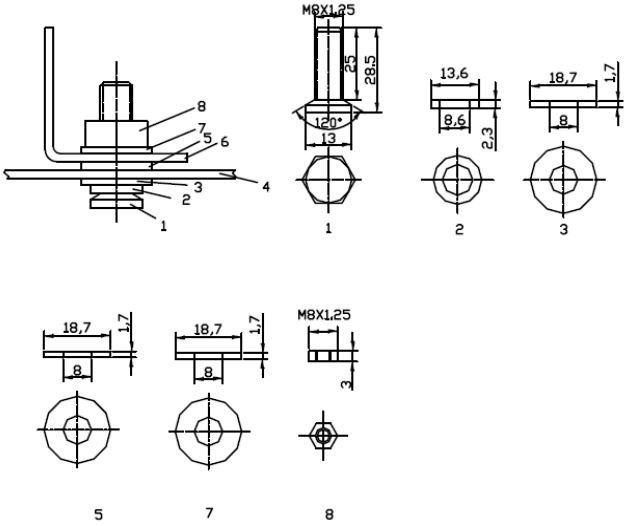
The mounting method has been verified by EGING and NOT CERTIFIED by a third party organization. Please review the descriptions and drawings carefully; not mounting the modules according to one of these methods may void your warranty. These mounting methods are designed to allow module loading of 5400Pa.

Mounting Using Frame Bolt Holes (Figures 1 、2 & 3)

The modules may be fastened to a support using the bolt holes in the bottom of the frame at location "C", as shown in Figure 1 (back view of the module) 、Figure 2 (mounting detail) and Figure 3 (parts detail). The modules are fastened with four (4) M8 bolts at least. Customers can choose external mounting holes or (and) internal mounting holes Symmetrically according to their own needs.



Figures 1



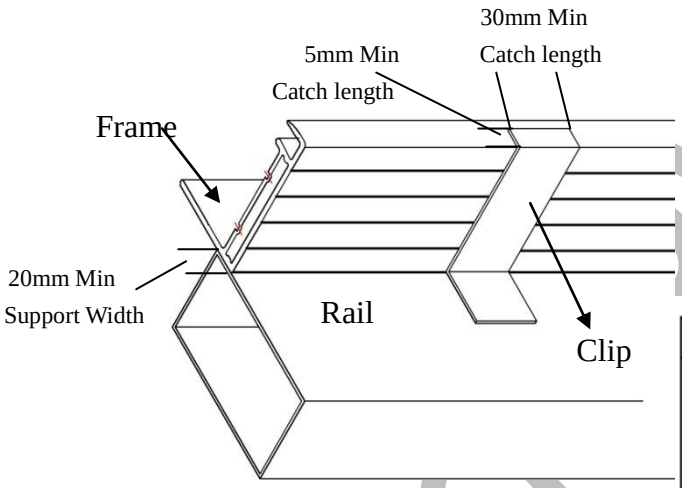
Figures 2

8	Nut	M8X1.25	S35C
7	Gasket	18.7X1.7	Fe
6	Mount	≈5	Q235
5	Gasket	18.7X1.7	Fe
4	Frame of the module	~1.9	Al
3	Gasket	18.7X1.7	Fe
2	Spring gasket	13.6X2.3	Mn65
1	Screw	M8X1.25	S35C
NO.	NAME	Size	Material

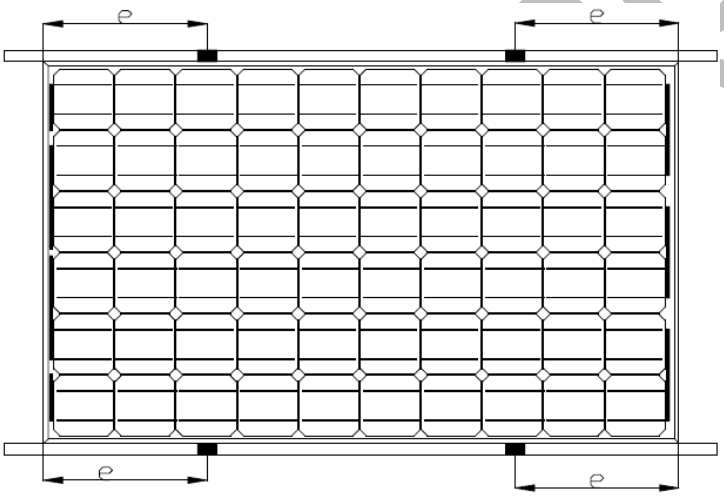
Figures 3

Mounting Using Clips on Long Edge of Module: Long Edge Parallel to Array Rails (Figure 5)

1) The modules may be mounted using clips (clamps) designed for solar modules as shown in Figures 4 and 5. Note that the clip positions are important – the clip centerlines must be between 140mm and 390 mm from the end of the module. The module must be supported along the length of the long edge, and should overlap the array rail by at least 20mm. Note that the mounting clips should meet the minimum dimensions (catch width of 5mm and length of 30mm) as shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400Pa.

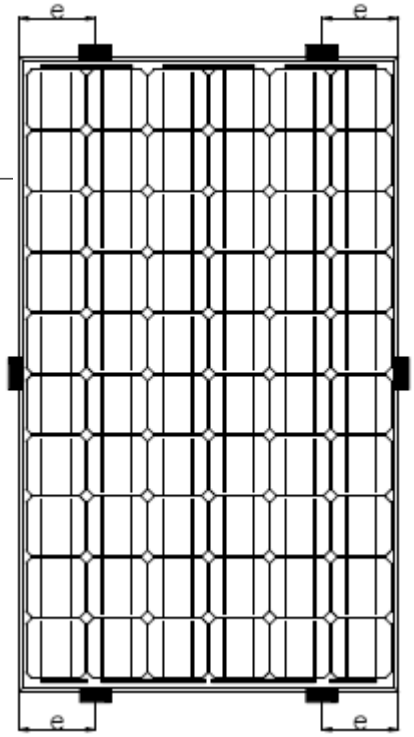


Figures 4



140mm＜e＜390mm

Figures 5



200mm＜e＜300mm

Figures 6

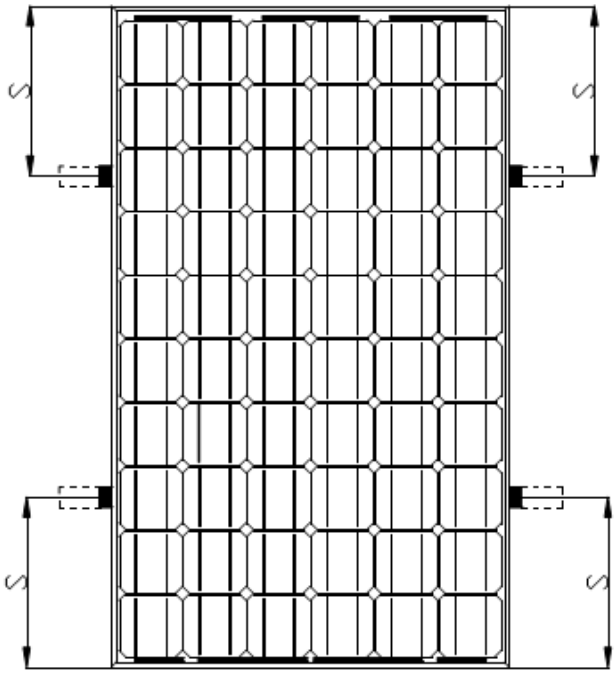
2) The modules may also be clamped at 4 corners on the short frame part as shown in Figure 6. The mounting clips should meet the minimum dimensions (catch width of 5 mm and length of 30 mm) as shown in Figure 4. Note that the clip positions are important – the clip centerlines must be between 200 mm and 300 mm from the end of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use four clamps on short frames and two clamps at the centre of each long frame, as shown in Figure 6.

Mounting Using Clips on Long Edge of Module: Long Edge Perpendicular to Array Rails (Figure 6)

1) The modules may also be mounted using clips on the long sides of the module when the array rails are

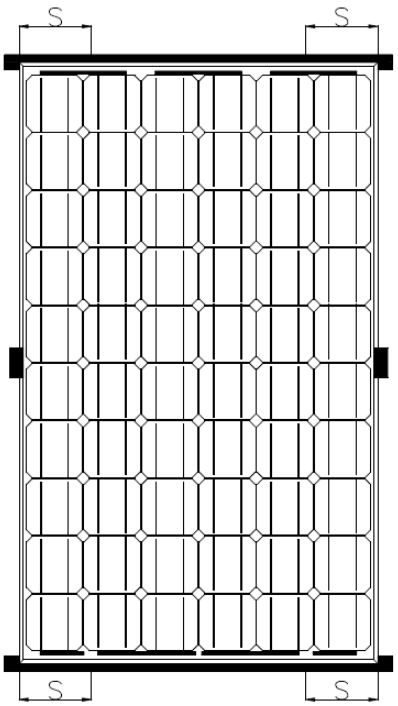
perpendicular to the long sides, as shown in Figure 7. The clip centerlines must be between 140mm and 390mm from the ends of the module. Note that the mounting clips should meet the minimum dimensions (catch width of 5mm and length of 30mm) shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400 Pa.

2) The modules may also be mounted on the short sides of the module with four clamps, as shown in Figure 8. The module must be supported along the length of the short edge, and should overlap the array rail by at least 20mm. The clip centerlines must be between 200 mm and 300 mm from the ends of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use two more clamps at the centre of each long frame, as shown in Figure 8.



140mm＜s＜390mm

Figures 7



200mm＜s＜300mm

Figures 8

2. ELECTRICAL INSTALLATION INSTRUCTION

Cable characteristics

Size: 4.0mm^2

Type: PV1-F

Temperature rating of conductor: -40~120 ℃

Module configuration (Recommend)

Maximum parallel strings without proper measures (e.g. fuse and/or blocking diode): 1 string.

Note: Parallel configuration is not limited in case of taking proper measure (e.g. fuse for protection of module and cable from over current, and/or blocking diode for prevention of unbalanced strings voltage) to block the reverse current flow.

3. WARNING

1）Do not stand or step on the PV module (Glass, Frame, Film and Terminal box).

2）Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of Isc and Voc marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor capacities, fuse sizes and size of controls connected to the module output.

INSTALLATION MANUAL - PHOTOVOLTAIC MODULES-

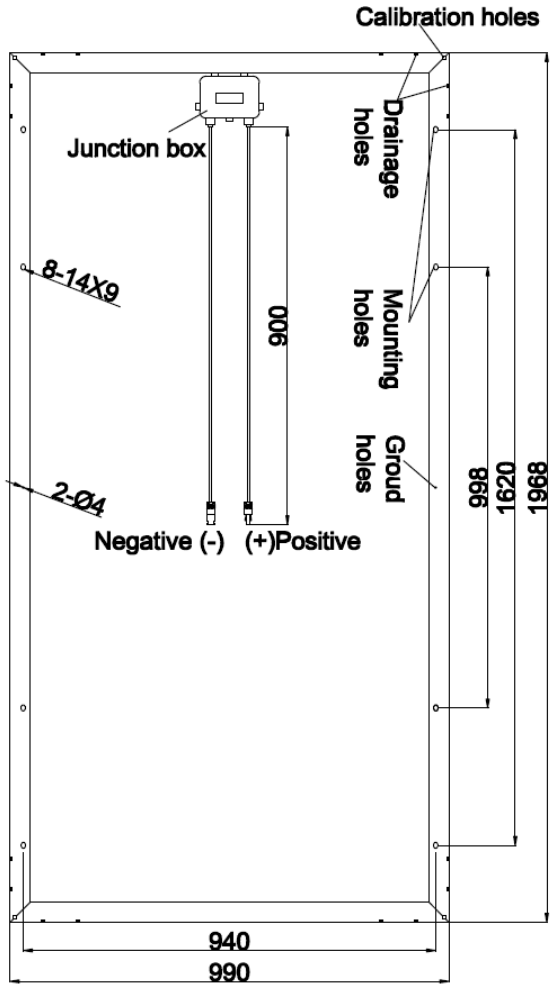
EG-***M72-C EG-***P72-C

1. INSTALLATION

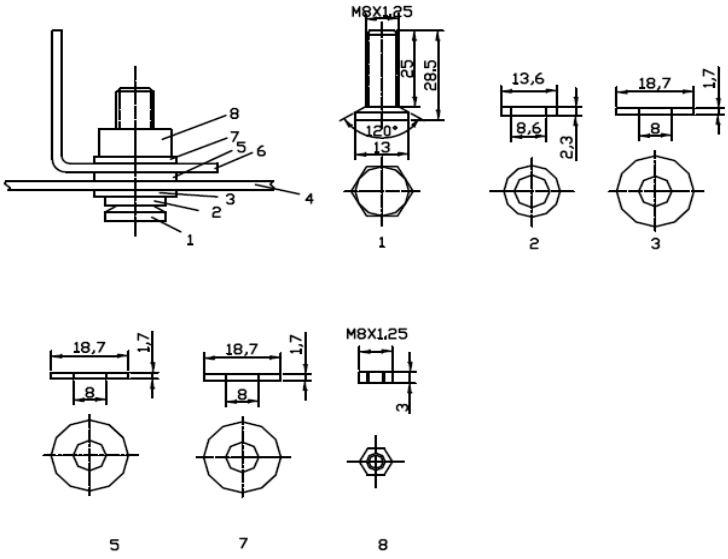
The mounting method has been verified by EGING and NOT CERTIFIED by a third party organization. Please review the descriptions and drawings carefully; not mounting the modules according to one of these methods may void your warranty. These mounting methods are designed to allow module loading of 5400Pa.

Mounting Using Frame Bolt Holes (Figures 1 、2 & 3)

The modules may be fastened to a support using the bolt holes in thebottom of the frame at location "C", as shown in Figure 1 (back view of the module) 、Figure 2 (mounting detail) and Figure 3 (parts detail). The modules are fastened with four (4) M8 bolts at least. Customers can choose external mounting holes or (and) internal mounting holes Symmetrically according to their own needs.



Figures 1.



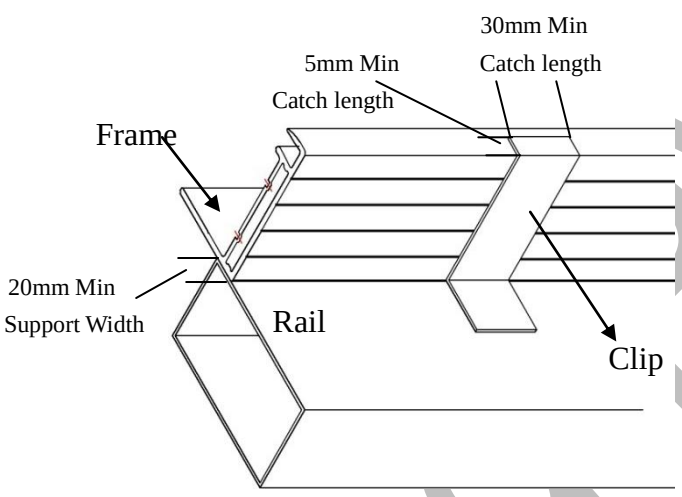
Figures 2

8	Nut	M8X1.25	S35C
7	Gasket	18.7X1.7	Fe
6	Mount	≈5	Q235
5	Gasket	18.7X1.7	Fe
4	Frame of the module	~1.9	Al
3	Gasket	18.7X1.7	Fe
2	Spring gasket	13.6X2.3	Mn65
1	Screw	M8X1.25	S35C
NO.	NAME	Size	Material

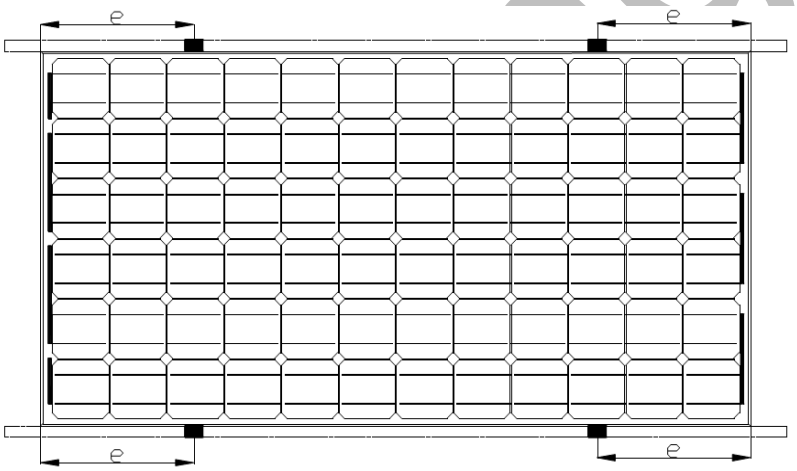
Figures 3.

Mounting Using Clips on Long Edge of Module: Long Edge Parallel to Array Rails (Figure 5)

1) The modules may be mounted using clips (clamps) designed for solar modules as shown in Figures 4 and 5. Note that the clip positions are important – the clip centerlines must be between 174mm and 485 mm from the end of the module. The module must be supported along the length of the long edge, and should overlap the array rail by at least 20mm. Note that the mounting clips should meet the minimum dimensions (catch width of 5mm and length of 30mm) as shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400Pa.

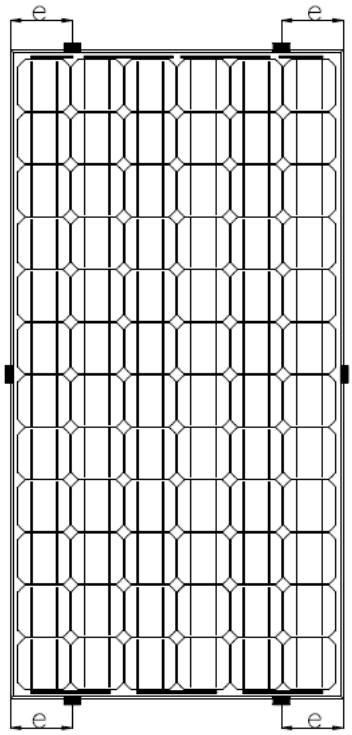


Figures 4



174mm＜e＜485mm

Figures 5



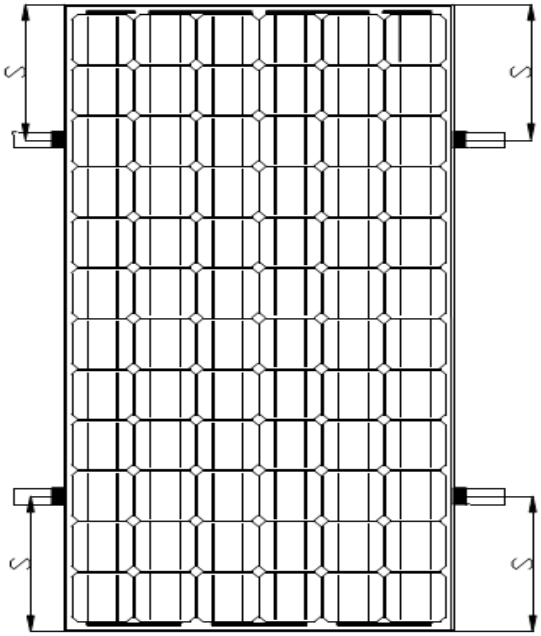
200mm＜e＜300mm

Figures 6

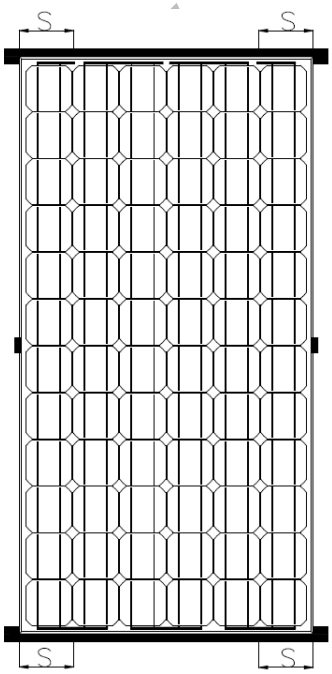
2) The modules may also be clamped at 4 corners on the short frame part as shown in Figure 6. The mounting clips should meet the minimum dimensions (catch width of 5 mm and length of 30 mm) as shown in Figure 4. Note that the clip positions are important – the clip centerlines must be between 200 mm and 300 mm from the end of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use four clamps on short frames and two clamps at the centre of each long frame, as shown in Figure 6.

Mounting Using Clips on Long Edge of Module: Long Edge Perpendicular to Array Rails (Figure 6)

1) The modules may also be mounted using clips on the long sides of the module when the array rails are perpendicular to the long sides, as shown in Figure 7. The clip centerlines must be between 174mm and 485mm from the ends of the module. Note that the mounting clips should meet the minimum dimensions (catch width of 5mm and length of 30mm) shown in Figure 4. The array rails must support the bottom of the modules and must be continuous pieces (no breaks in the rail). The maximum snow load is 5400 Pa.
2) The modules may also be mounted on the short sides of the module with four clamps, as shown in Figure 8. The module must be supported along the length of the short edge, and should overlap the array rail by at least 20mm. The clip centerlines must be between 200 mm and 300 mm from the ends of the module. The maximum snow load is 2400 Pa. For 5400 Pa loads, use two more clamps at the centre of each long frame, as shown in Figure 8.



174mm＜s＜485mm
Figures 7



200mm＜s＜300mm
Figures 8

2. ELECTRICAL INSTALLATION INSTRUCTION

Cable characteristics

Size: 4.0mm^2
Type: PV1-F
Temperature rating of conductor: -40~120 ℃

Module configuration (Recommend)

Maximum parallel strings without proper measures (e.g. fuse and/or blocking diode): 1 string.
Note: Parallel configuration is not limited in case of taking proper measure (e.g. fuse for protection of module and cable from over current, and/or blocking diode for prevention of unbalanced strings voltage) to block the reverse current flow.

3. WARNING

1）Do not stand or step on the PV module (Glass, Frame, Film and Terminal box).

2）Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at Standard Test Conditions. Accordingly, the values of Isc and Voc marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor capacities, fuse sizes and size of controls connected to the module output.

ANNEX: MECHNICAL AND ELECTRICAL RATINGS

Standard Test Conditions are : irradiance of 1kW/m^2, AM 1.5 spectrum, and cell temperature of 25℃. Pmax of any individual module will be within 0~+3% tolerance of these specified values. Specifications and electric characteristics in Table 1 are subject to technical and product innovations. Information in this document is subject to change without notice.

Table 1: Specifications for EG –series photovoltaic modules under STC

Type of cells	Type of Module	Maximum power Pmax (W)	Operating Voltage Vmp (V)	Operating Current Imp (A)	Open Circuit Voltage Voc (V)	Short Circuit Current Isc (A)	Max.Series Fuse Rating(A)	Overall Dimension (mm）	Weight (Kg）
48 cells 156*156 poly（2 bus bar）	EG-150P48-C	150	22.8	6.5	28.8	7.3	15	1335×990×45	16.2
	EG-155P48-C	155	22.8	6.8	28.8	7.45	15		
	EG-160P48-C	160	22.8	7.02	28.8	7.65	15		
	EG-165P48-C	165	23	7.18	29	7.8	15		
	EG-170P48-C	170	23	7.4	29	7.8	15		
	EG-175P48-C	175	23.2	7.56	29.2	8.2	15		
	EG-180P48-C	180	23.4	7.69	29.4	8.62	15		
48 cells 156*156 poly（3 bus bar）	EG-170P48-C	170	22.26	7.64	28.91	8.32	15		
	EG-175P48-C	175	22.53	7.77	29.12	8.41	15		
	EG-180P48-C	180	22.76	7.91	29.31	8.49	15		
	EG-185P48-C	185	22.99	8.05	29.52	8.58	15		
	EG-190P48-C	190	23.23	8.18	29.76	8.65	15		
	EG-195P48-C	195	23.47	8.31	29.93	8.76	15		
	EG-200P48-C	200	23.73	8.43	30.13	8.84	15		
	EG-205P48-C	205	23.95	8.56	30.33	8.92	15		
	EG-210P48-C	210	24.17	8.69	30.55	9.01	15		
54 cells 156*156 poly（2 bus bar）	EG-175P54-C	175	25.65	6.82	32.4	7.6	15	1490×990×50	18.3
	EG-180P54-C	180	25.65	7.02	32.4	7.83	15		
	EG-185P54-C	185	25.87	7.15	32.6	7.99	15		
	EG-190P54-C	190	25.87	7.34	32.6	8.2	15		
	EG-195P54-C	195	26.1	7.47	32.8	8.37	15		
	EG-200P54-C	200	26.1	7.66	32.8	8.58	15		
	EG-205P54-C	205	26.33	7.79	33.1	8.73	15		
	EG-210P54-C	210	26.57	7.9	33.3	8.88	15		
54 cells 156*156 poly（3 bus bar）	EG-190P54-C	190	24.97	7.61	32.31	8.23	15		
	EG-195P54-C	195	25.26	7.72	32.53	8.32	15		
	EG-200P54-C	200	25.52	7.84	32.77	8.41	15		
	EG-205P54-C	205	25.73	7.97	32.98	8.48	15		
	EG-210P54-C	210	26.00	8.08	33.21	8.59	15		
	EG-215P54-C	215	26.29	8.18	33.48	8.64	15		

EGing PV

	EG-220P54-C	220	26.51	8.30	33.68	8.74	15		
	EG-225P54-C	225	26.76	8.41	33.91	8.82	15		
	EG-230P54-C	230	27.00	8.52	34.13	8.92	15		
	EG-235P54-C	235	27.21	8.64	34.37	9.01	15		
60 cells 156*156 poly（2 bus bar）	EG-200P60-C	200	28.67	6.97	36.52	7.81	15		
	EG-205P60-C	205	28.55	7.2	36.58	7.97	15		
	EG-210P60-C	210	28.41	7.39	36.61	8.04	15		
	EG-215P60-C	215	28.28	7.6	36.67	8.26	15		
	EG-220P60-C	220	28.22	7.8	36.69	8.48	15		
	EG-225P60-C	225	28.18	7.99	36.74	8.68	15		
	EG-230P60-C	230	28.22	8.15	36.76	8.9	15		
60 cells 156*156 poly（3 bus bar）	EG-215P60-C	215	28.37	7.58	35.93	8.21	15	1650×990×50 or 1650×990×40	19.5 or 19.0
	EG-220P60-C	220	28.61	7.69	36.19	8.29	15		
	EG-225P60-C	225	28.89	7.79	36.45	8.37	15		
	EG-230P60-C	230	29.16	7.89	36.69	8.46	15		
	EG-235P60-C	235	29.42	7.99	36.95	8.55	15		
	EG-240P60-C	240	29.71	8.08	37.25	8.62	15		
	EG-245P60-C	245	29.92	8.19	37.47	8.73	15		
	EG-250P60-C	250	30.20	8.28	37.72	8.81	15		
	EG-255P60-C	255	30.47	8.37	37.97	8.89	15		
	EG-260P60-C	260	30.74	8.46	38.24	8.98	15		
72 cells 156*156 poly（2 bus bar）	EG-235P72-C	235	34.2	6.87	43.2	7.66	15	1968×990×50	27.5
	EG-240P72-C	240	34.2	7.02	43.2	7.83	15		
	EG-245P72-C	245	34.5	7.1	43.5	7.93	15		
	EG-250P72-C	250	34.5	7.25	43.5	8.1	15		
	EG-255P72-C	255	34.5	7.39	43.5	8.37	15		
	EG-260P72-C	260	34.8	7.47	43.8	8.47	15		
	EG-265P72-C	265	34.8	7.61	43.8	8.52	15		
	EG-270P72-C	270	35.1	7.67	44.1	8.62	15		
	EG-275P72-C	275	35.42	7.76	44.4	8.72	15		
	EG-280P72-C	280	35.42	7.91	44.4	8.89	15		
72 cells 156*156 poly（3 bus bar）	EG-260P72-C	260	34.08	7.63	43.93	8.26	15		
	EG-265P72-C	265	34.47	7.69	44.11	8.33	15		
	EG-270P72-C	270	34.76	7.77	44.27	8.39	15		
	EG-275P72-C	275	35.13	7.83	44.44	8.47	15		
	EG-280P72-C	280	35.45	7.90	44.61	8.53	15		
	EG-285P72-C	285	35.81	7.96	44.80	8.59	15		
	EG-290P72-C	290	36.16	8.02	44.98	8.66	15		

EGing PV

	EG-295P72-C	295	36.47	8.09	45.14	8.72	15		
	EG-300P72-C	300	36.82	8.15	45.31	8.78	15		
	EG-305P72-C	305	37.11	8.22	45.47	8.84	15		
	EG-310P72-C	310	37.49	8.27	45.65	8.91	15		
	EG-315P72-C	315	37.82	8.33	45.83	8.99	15		
	EG-320P72-C	320	38.19	8.38	45.99	9.06	15		
72 cells 125*125 mono	EGM-140	140	36.48	3.84	43.34	4.21	10	1580×808×45 or 1580×808×35	15.5 or 15.0
	EGM-145	145	36.26	4.01	43.52	4.27	10		
	EGM-150	150	34.2	4.39	43.2	4.95	10		
	EGM-155	155	33.58	4.62	41.56	4.9	10		
	EGM-160	160	34.54	4.65	43.68	5.08	10		
	EGM-165	165	34.47	4.79	43.74	5.23	10		
	EGM-170	170	34.52	4.93	43.82	5.38	10		
	EGM-175	175	34.43	5.1	43.89	5.57	10		
	EGM-180	180	34.82	5.17	43.66	5.66	10		
	EGM-185	185	35.11	5.27	43.89	5.72	10		
	EGM-190	190	35.52	5.35	43.96	5.76	10		
	EGM-195	195	35.77	5.45	44.14	5.87	10		
	EGM-200	200	36.05	5.55	44.32	5.98	10		
	EGM-205	205	36.35	5.64	44.50	6.07	10		
	EGM-210	210	36.59	5.74	44.67	6.15	10		
	EGM-215	215	36.88	5.83	44.82	6.23	10		
	EGM-220	220	37.17	5.92	44.99	6.32	10		
48 cells 156*156 mono	EG-175M48-C	175	22.21	7.88	29.13	8.60	15	1335×990×45	16.2
	EG-180M48-C	180	22.53	7.99	29.26	8.66	15		
	EG-185M48-C	185	22.90	8.08	29.41	8.73	15		
	EG-190M48-C	190	23.18	8.20	29.54	8.80	15		
	EG-195M48-C	195	23.47	8.31	29.67	8.85	15		
	EG-200M48-C	200	23.81	8.40	29.81	8.92	15		
	EG-205M48-C	205	24.15	8.49	29.95	8.98	15		
	EG-210M48-C	210	24.48	8.58	30.09	9.05	15		
	EG-215M48-C	215	24.77	8.68	30.23	9.12	15		
54 cells 156*156 mono	EG-195M54-C	195	25.63	7.61	32.47	8.37	15	1490×990×50	18.3
	EG-200M54-C	200	25.88	7.73	32.65	8.46	15		
	EG-205M54-C	205	26.09	7.86	32.83	8.54	15		
	EG-210M54-C	210	26.34	7.98	33.02	8.63	15		
	EG-215M54-C	215	26.55	8.10	33.20	8.71	15		
	EG-220M54-C	220	26.77	8.22	33.39	8.79	15		

EGing PV

	EG-225M54-C	225	26.99	8.34	33.55	8.86	15		
	EG-230M54-C	230	27.23	8.45	33.74	8.95	15		
	EG-235M54-C	235	27.46	8.56	33.93	9.04	15		
	EG-240M54-C	240	27.69	8.67	34.12	9.13	15		
60 cells 156*156 mono	EG-220M60-C	220	28.39	7.75	36.30	8.58	15	1650×990×50 or 1650×990×40	19.5 or 19.0
	EG-225M60-C	225	28.67	7.85	36.47	8.63	15		
	EG-230M60-C	230	28.94	7.95	36.64	8.68	15		
	EG-235M60-C	235	29.23	8.04	36.86	8.73	15		
	EG-240M60-C	240	29.49	8.14	36.98	8.79	15		
	EG-245M60-C	245	29.75	8.24	37.10	8.83	15		
	EG-250M60-C	250	29.99	8.34	37.28	8.90	15		
	EG-255M60-C	255	30.26	8.43	37.49	8.94	15		
	EG-260M60-C	260	31.11	8.36	38.49	8.92	15		
	EG-265M60-C	265	30.85	8.59	37.85	9.05	15		
72 cells 156*156 mono	EG-260M72-C	260	34.22	7.60	43.46	8.38	15	1968×990×50	27.5
	EG-265M72-C	265	34.47	7.69	43.62	8.44	15		
	EG-270M72-C	270	34.76	7.77	43.78	8.51	15		
	EG-275M72-C	275	34.99	7.86	43.94	8.57	15		
	EG-280M72-C	280	35.31	7.93	44.12	8.63	15		
	EG-285M72-C	285	35.67	7.99	44.29	8.69	15		
	EG-290M72-C	290	35.99	8.06	44.45	8.76	15		
	EG-295M72-C	295	36.29	8.13	44.62	8.81	15		
	EG-300M72-C	300	36.55	8.21	44.79	8.87	15		
	EG-305M72-C	305	36.80	8.29	44.95	8.92	15		
	EG-310M72-C	310	37.72	8.22	46.16	8.88	15		
	EG-315M72-C	315	37.28	8.45	45.28	9.07	15		
	EG-320M72-C	320	37.57	8.52	45.42	9.15	15		

EGing PV